



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/878,556	06/11/2001	S. Sundar Kumar Iyer	FIS9-2000-0372-US1	3210

7590 04/07/2003  
Philmore H. Colburn II  
Cantor Colburn LLP  
55 Griffin Road South  
Bloomfield, CT 06002

EXAMINER

CHEN, JACK S J

ART UNIT	PAPER NUMBER
----------	--------------

2813

DATE MAILED: 04/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/878,556

Applicant(s)  
Iyer et al.

Examiner  
Jack Chen

Art Unit  
2813



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Jan 14, 2003
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-23 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

Art Unit: 2813

### DETAILED ACTION

1. In response to the communications dated January 14, 2003, claims 1-4, 6-23 are active in this application as a result of the cancellation of claim 5.
2. The indicated allowability of claims 2-4, 9-10 and 15-18 are withdrawn in view of the newly discovered reference(s) to Wu et al., U.S./6,013,557. Rejections based on the newly cited reference(s) follow.

#### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 8-15, 17-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al., U.S./6,013,557.

Wu et al. disclose a method for forming oxide layers of varying thicknesses across a semiconductor substrate surface, which comprises patterning and blocking a semiconductor substrate 22 surface with a photoresist material layer 24 (i.e., fig. 1); removing a portion of the photoresist material layer to expose a device isolated region on a blocked semiconductor substrate surface (fig. 1); increasing a differential oxidation rate value of an exposed

Art Unit: 2813

semiconductor substrate surface comprising converting the exposed semiconductor substrate material from a non-porous silicon material to a porous silicon material 36 (i.e., this is done by implanting helium, fig. 1); removing the photoresist material layer (fig. 2); oxidizing the semiconductor substrate surface (fig. 3); forming a first oxide layer 42 having a first thickness on the exposed semiconductor substrate; and forming a second oxide layer 44 having a second thickness on the blocked semiconductor substrate surface (fig. 3), wherein the first thickness is greater than the second thickness, see figs. 1-16 and cols. 1-10 for more details.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2813

6. Claims 2-4 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al., U.S./6,013,557 in view of Bomchil et al., "porous silicon: the material and its applications to SOI technologies" or Cristoloveanu et al. "electrical characterization of SOI materials and devices".

Wu et al. disclosed above; however, Wu et al. are silent to forming the porous silicon by using HF solution.

Bomchil et al. teaches a method forming porous silicon by using HF solution, see pages 294-309. Cristoloveanu et al. also disclose a method forming porous silicon by using HF solution, see pages 29-31.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form porous silicon by using HF solution as taught by Bomchil et al. or Cristoloveanu et al. in the method of Wu et al. in order to achieve defect-free silicon layer.

7. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al., U.S./6,013,557 in view of Crowder et al., U.S./6,335,262 B1 or Cho, U.S./6,143,669.

Wu et al. disclosed above; however, Wu et al. are silent to forming STI.

Crowder et al. teach a method for forming a semiconductor device, which includes forming STI, see fig. 1. Cho also teaches a method for forming a semiconductor device, which includes forming STI, see col. 2, lines 60-65.

Art Unit: 2813

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further forming STI for separating the adjacent devices as taught by Cho or Crowder et al. in the method of Wu et al. in order to achieve a planar surface.

*Conclusion*

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Chen whose telephone number is (703) 308-5838. The examiner can normally be reached on Monday-Friday (alternate Monday off) from 8:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached on (703)308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

  
Jack Chen

April 3, 2003

  
JACK CHEN  
PATENT EXAMINER